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Inside Wallops

Nighttime Clouds Shed Light On Space Weather

NASA is looking for the opportunity, beginning tonight, June 23, to launch rocket experiments that will form nighttime clouds in a project intended to shed light on space weather.

Three of the four rocket experiments, launched from the NASA Wallops Flight Facility will include the formation of milky, white clouds. The clouds will allow scientists to view winds in a high and poorly accessible layer of Earth's atmosphere called the ionosphere.



NASA photo

TMA cloud from a previous launch.

The ionosphere is strongly affected by solar activity, such as solar flares and UV radiation from sunspots. The state of the ionosphere affects such things as radio communications and Global Positioning System reception on Earth.

The clouds may be visible, for up to 20 minutes by residents in the mid-Atlantic region, the lower northeastern United States and South Carolina. The chemicals used to make the clouds pose no danger to the public.

The clouds will allow scientists to monitor the Earth's winds at the edge of space, said Dr. Gregory Earle from the University of Texas in Dallas, the lead researcher for the project.

"Winds in the ionosphere impact space weather just as the winds on Earth impact our weather. Space weather in turn can affect satellites orbiting the Earth and communication and electrical systems on

the ground," Earle said. "The clouds will act as a tracer and allow us to view the winds at various altitudes over a period of time."

"The data gathered from this project will aid in our understanding of the relationship between the winds and ionospheric activity. This research may one day lead to the ability to forecast space weather, just as forecasters do today for Earth weather," Earle said.

The time and day of launch depends on two major factors: clear skies are required at two of three special camera sites located along the Virginia and North Carolina coast; and a layer of ionized particles must form in the upper layers of the ionosphere and begin to descend.

All four launches will occur in one night between 9:30 p.m. and 5 a.m., EDT, June 23 through July 10. There will be about 90 minutes between the launch of the first, second and third rockets. The third and fourth rockets will be launched about 10 minutes apart. The actual period between launches will be decided in real-time.

The milky white clouds form from the release of trimethylaluminum (TMA) on the first, second and fourth rockets. The third rocket carries only scientific instruments. The TMA will be released in space over the Atlantic Ocean at altitudes from 56 to 109 miles. The clouds will take about four to five minutes to form after the TMA release.

The products of the reaction, when TMA is exposed to air or water, are aluminum oxide, carbon dioxide and water. TMA poses no threat to the public during preparation on the ground or during the release.

The project is a NASA and multi-university effort. In addition to the University of Texas, students and personnel from Clemson University and Utah State University are participating in the mission.

Keep track of the progress of the mission by calling the Wallops launch status line at: 757/824-2050.

NASA will have a Web site with text updates and live video of the launches during the mission at: <http://www.wff.nasa.gov/webcast>

Wallops Shorts.....

In the News

Daily Times – Letters to the Editor
"Wallops Facility is Alive and Growing"

Eastern Shore News – Letters to the Editor
"Wallops is Active and Growing"

Eastern Shore News
"Wallops Research Park Plan Gets Fuel"

Daily Times
"Wallops Looks to Create Research Park"

Space Science.com
"Night Clouds"

Richmond Times-Dispatch
"Wallops Island Launch Planned – Rockets will carry explosive chemical"

Dallas News
"Dallas Scientist Employs Rockets, Chemical Cloud in Weather Experiment"

SpaceFlight Now.com
"Nighttime Clouds Shed Light on Space Weather"

On the Road

Caroline Massey, Assistant Director of Management and Operations, and John Campbell, Director of Suborbital and Special Orbital Projects, presented a proposal on the Wallops Research Park to the Accomack County Board of Supervisors on June 25. The Research Park will include property owned by NASA, the Marine Science Consortium, and Accomack County.

Update: Kidney donor, Todd Thornes, NASA Range Safety Office, and the recipient, C. L. Bundick, returned to their homes on Friday, June 20, and are reported doing fine. Bundick's new kidney is functioning well!

Centennial of Flight Milestones

64 years ago on June 28, Pan Am initiated the first transatlantic passenger service.

55 years ago on June 26, the Berlin Airlift begins.

Summer Students 2003

Once again, students from across the country have descended on Wallops for the summer.

On June 23, Dr. John Campbell, Director of Suborbital and Special Orbital Projects, welcomed this year's 38 students and gave them a brief overview of activities and projects at Wallops.

The following is a listing of the students and their mentors:

Esther Dabipi, University of Maryland, Eastern Shore (UMES) Equal Opportunities Program Office — Mentor: Lisa Johnson

Rebecca Hudson, Salisbury University Public Affairs Office — Mentor: Betty Flowers

Katrina LaCurts, Pocomoke High School, **Meghan Marsh**, Nandua High School, **Samuel Arumala** and **Nayo Howard**, Parkside High School Public Affairs Office — Mentor: Ed Parrott

Starmayne Wilson, UMES Procurement Office — Mentors: Bernie Pagliaro and Pam Taylor

Aimee Lemieux — Rochester Institute of Technology, Material Engineering Branch — Mentor: Jerry Sterling

Kai-hua Wu, UMES Systems Software Engineering Branch — Mentor: Dwayne Morgan

Andrew Mitchell, UMES Wallops Systems Software Engineering Branch -- Mentors: Sue Semancik and Dwayne Morgan

John Wood and Tina Drew, UMES, and **Andrew Hopkins**, Virginia Tech GN&C and Mission Systems Engineering Branch — Mentor: Russell Dufrene

Crystal Showell, UMES Safety Office - Mentor: Terry Potterton

James Pruitt, Piedmont College Aircraft Office - Mentor: Rob Hurley

Maia Saffell, UMES Aircraft Office - Mentor: Janie Penn

Nnenna Oforun, UMES Shuttle Small Payloads Projects Office - Mentor: Chuck Brodell

Gabe Ladd, Boston University Observational Science Branch- Mentor: Geoff Bland

Angie Chappell, University of Texas, and **Isaac Mensah**, Jackson State University Observational Science Branch - Mentor: John Moisan

Daniel Thomas, Virginia Tech U.S. Department of Agriculture — Mentor: Jason Woods

Javier Cerna and Sam Belt, New Mexico State University, Physical Sciences Laboratory, NMSU — Mentor: Henry Cathey

Dustin Brimer, Salisbury University Computer Sciences Corporation — Mentor: Craig Stallings

Justin Atkinson, University of Maryland, Baltimore County Intercom/Computer Sciences Corporation — Mentor: Paul Bashor

Jeremy Brown, West Virginia University Institute of Technology Computer Sciences Corporation — Mentor: Sue Semancik

Justin Babcock, Clemson, and **Pete Cipollo**, Penn State NASA Sounding Rocket Operations Contract (NSROC) — Mentor: Giovanni Rosanova

Andy Owens, Clemson NASA Sounding Rocket Program Office and NSROC — Mentors: Phil Eberspacher and Jan Jackson

Jesse Hecht, Penn State NSROC — Mentors: Glenn Maxfield and Rob Marshall

Colin Bateson, University of Virginia, and **Adam Saunders**, University of Alaska NSROC — Mentor: Jan Jackson

Emily Woodward, **Jesse Panneton** and **Catherine Herman**, Virginia Tech, and **Gaelen Hatfield**, University of Alaska NSROC — Mentor: Walt Costello

Jeff Henry, Utah State NSROC — Mentor: Rick Weaver

Benjamin Seagrist, Messiah College NSROC — Mentor: Zeb Barfield

Blood Drive

Have a heart.....be a blood donor Wallops Blood Drive for the Blood Bank of Delaware/Eastern Shore



Building F-3
Thursday, July 17
9 a.m. until 3 p.m.

If you are willing to be a donor, contact Linda Layton on x1561.

Our Flag, Things You Should Know

The U.S. flag can be flown everyday of the year. If it is flown for 24 hours, it should be illuminated so the flag is not in complete darkness.

The following are some of the rules for proper display and use of the U.S. flag, as established by generally accepted custom and by Public Law 94-344 approved by Congress and signed by the President in 1976. The Flag Code does not impose penalties for the misuse of the flag. Such penalties are determined by the individual states and the District of Columbia.

Bunting — The U.S. flag should never be used as drapery, never festooned, drawn back or up in folds. It should always be allowed to fall free. Bunting should be used for decoration; first blue, then white, then red.

Behind a speaker — When used on a speaker's platform, if displayed flat, the flag should be above and behind the speaker. Use bunting to decorate a speaker's desk or the front of the platform.

Over a street — When displayed over a street, place the union so it faces north or east depending on the direction of the street.

From a building — When the flag is displayed from a staff projecting from a windowsill, balcony or building front, the union of the flag should always be at the peak of the staff unless the flag is half-staff.

On a wall — When displayed either horizontally or vertically against a wall, the union should be uppermost and to the flag's own right, that is to the observer's left. In a window, the union should be to the flag's right when viewed from the outside.

On a staff — When the U.S. flag is flown with flags or pennants of states, cities or societies, it should always be at the peak. When flown from adjacent staffs, the U.S. flag should be hoisted first and lowered last.

National flags — When flags of two or more nations are displayed together, they should be flown from separate staffs of the same height, and the flags should be of approximately equal size.

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